

ASSIGNMENT 2

Textbook assignment: Chapter 2, "Wiring Techniques," pages 2-24 through 2-53.

Chapter 3, "Schematic Reading," pages 3-1 through 3-24.

- 2-1. Why must materials to be soldered be cleaned just prior to the soldering process?
1. To ensure the solder will adhere to the surface
 2. To prevent the solder from becoming brittle from impurities and eventually failing
 3. To prevent an uneven flow of solder to the surface
 4. Each of the above
- 2-2. What is meant by the term "tinning"?
1. Removing the oxide coating of the material to be soldered
 2. Preheating the material to be soldered to remove any impurities left from the stripped insulation
 3. Coating the material to be soldered with a light coat of solder
 4. Applying pure tin to the material to be soldered to ensure adherence of the solder
- 2-3. When a wire is soldered to a connector, why should the wire be stripped approximately 1/32 inch longer than the depth of the solder barrel?
1. To prevent burning the wire insulation
 2. To allow the wire to flex more easily at stress points
 3. Both 1 and 2 above
 4. To prevent the flux from touching the insulation
- 2-4. When a wire has been properly stripped and is to be soldered to a connector, what total length of the exposed wire should be tinned?
1. One-third
 2. One-half
 3. Two-thirds
 4. The entire exposed length
- 2-5. What action generally causes a fractured solder joint?
1. Movement of the soldered parts during the cooling process
 2. Application of too much heat to the parts
 3. Introduction of impurities to the joint from dirty solder or flux
 4. Application of too much solder to the joint
- 2-6. What term defines the capacity of a soldering iron to generate and maintain a satisfactory soldering temperature while giving up heat to the joint being soldered?
1. Iron current flow
 2. Thermal inertia
 3. Resistance soldering
 4. Self-regulating heat
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- 2-7. Why should a small wattage soldering iron NOT be used to solder large conductors?
1. The current flow is limited
 2. The iron cannot reach a high enough temperature
 3. The iron cannot maintain a satisfactory soldering temperature while giving up heat to the conductor
 4. The tip of a small wattage iron is too small for large conductors
- 2-8. Which of the following features BEST describes a well designed soldering iron?
1. It may be used for both large and miniature soldering jobs
 2. It is light weight with an all-purpose tip
 3. It can be automatically switched from a low wattage to a high wattage output
 4. It has a built-in self-regulating element
- 2-9. What should be done with the removable tip of a soldering gun after it becomes pitted?
1. Dip it in flux and continue to use it
 2. Discard the tip and replace it
 3. Grind the tip down to the next smaller size and reuse it
 4. File the tip smooth and retin it
- 2-10. If, during the soldering process, the soldering gun switch is depressed for longer than 30 seconds, what danger exists?
1. The insulation of the wire may be burned
 2. An oxide film will rapidly form on the conductor
 3. The flux may ignite
 4. The finger switch may be locked in the depressed position from the heat
- 2-11. What condition causes the nuts or screws which hold the tip of a soldering gun to loosen?
1. The trigger is depressed for too long a period
 2. The gun is pulsed too often
 3. The heating and cooling cycle loosens them
 4. The gun is used for soldering items beyond its capacity
- 2-12. Which of the following electronic components should NOT be installed or removed by the use of a soldering gun?
1. Transistors
 2. Resistors
 3. Capacitors
 4. Each of the above
- 2-13. Why are resistance soldering irons safer for electrical equipment components than other soldering irons or guns?
1. The current flow is very low
 2. The tips are hot only during the brief period of actual soldering
 3. The transformer provides a high voltage for a measured period of time
 4. The tips are made from highly conductive ferrous iron which heat and cool very rapidly
- 2-14. For which of the following reasons is antisieze compound used with a pencil iron equipped with removable tips?
1. To allow the tip to be easily removed
 2. To prevent the tip form loosening during repeated soldering operations
 3. To minimize the number of times the tip must be retinned
 4. Each of the above

2-15. If you do not have a suitable tip for desoldering, how can one be improvised?

1. File an available tip down to the desired size
2. Bend a piece of wire to the desired shape and insert the ends of the wire into the barrel
3. Bend a piece of copper wire to the desired shape after wrapping it around a regular tip
4. File a piece of round stock, preferably steel, to the desired shape and insert it in the barrel

2-16. What are the two metals most often used to form soft solder?

1. Lead and antimony
2. Tin and lead
3. Bismuth and tin
4. Tin and cadmium

2-17. What chemical or physical change causes a joint of soldered copper conductors to become one common metal?

1. A physical change takes place as the solder flows between the molecules of copper joining them together when cooled
2. A physical change takes place as both metals displace one another
3. A chemical change takes place as the copper is dissolved into the solder thereby forming an alloyed metal
4. A chemical change takes place when the additional materials added to the solder are heated causing a gluing effect between the solder and the copper

2-18. When you solder electrical connectors, splices, and terminal lugs, what type of solder should you use?

1. 65/35 solder
2. 63/37 solder
3. 60/40 solder
4. 57/43 solder

2-19. Why is flux used in the soldering process?

1. It dilutes the molten solder and allows it to flow
2. It acts as a cleaning agent to remove oxide
3. It acts as the bonding agent between the solder and metal
4. It forms a conductive bond between the metal and the solder

2-20. When electrical and electronic components are soldered, what type of flux must be used?

1. Hydrochloric acid
2. Sal ammoniac
3. Zinc chloride
4. Rosin

2-21. What two properties must a solvent have?

1. Noncorrosive-nonconductive
2. Corrosive-conductive
3. Noncorrosive-conductive
4. Corrosive-nonconductive

2-22. Why are solvents used in the soldering process?

1. To remove the flux from the metal surface being soldered
2. To remove contaminants from the soldered connection
3. To dilute the flux and allow it to flow freely
4. To improve the conductivity of the flux

- 2-23. Why are heat shunts used in the soldering process?
1. To conduct heat from the component being soldered back to the iron
 2. To increase the temperature of the soldering iron or gun
 3. To prevent damage to adjacent heat-sensitive components
 4. To decrease the temperature to the conductor being soldered
- 2-24. For which of the following reasons are conductors laced together?
1. To present a neat appearance
 2. To help support each other
 3. To aid in tracing conductors
 4. Each of the above
- 2-25. Although it may be used, why is the use of round cord discouraged for lacing conductors?
1. It is bulkier than the flat type
 2. It is more difficult to handle
 3. It is not fungus resistant
 4. It has a tendency to cut into wire insulation
- 2-26. If you are preparing to single lace conductors, what total length must the lacing be in relationship to the longest conductor?
1. One and one-half times the length
 2. Twice the length
 3. Two and one-half times the length
 4. Five times the length
- 2-27. Why is a lacing shuttle used when conductors are laced in bundles?
1. It helps prevent the conductors from twisting together
 2. It helps prevent the cord or tape from fouling
 3. It keeps the "lay" of the cord or tape
 4. It ensures that hitches are evenly spaced
- 2-28. Under certain circumstances, it is permissible to twist conductors together prior to lacing.
1. True
 2. False
- 2-29. When coaxial cables are laced, the use of round cord is prohibited. What additional precaution must be observed?
1. Coaxial cables may not be laced with other conductors
 2. Bundles containing coaxial cables must be double laced
 3. Half hitches must be used in place of marling hitches
 4. Coaxial cables must not be tied so tightly as to deform the dielectric
- 2-30. How should a single lace be started?
1. With a square knot and two marling hitches
 2. With a marling hitch and a telephone hitch
 3. With a telephone hitch and two half hitches
 4. With a square knot and two half hitches
- 2-31. Under which of the following conditions should a double lace be used?
1. Three coaxial cables form the bundle
 2. A maximum of six conductors form the bundle
 3. The bundle is larger than one inch in diameter
 4. The bundle exceeds 10 feet in length
- 2-32. How should a double lace be started?
1. With a square knot
 2. With a half hitch
 3. With a marling hitch
 4. With a telephone hitch

2-33. How should laced cable groups that run parallel to each other be bound together?

1. With marling hitches
2. With telephone hitches
3. With square knots
4. With half hitches

2-34. What tool or technique should be used to install self-clinching cable straps?

1. Military standard hand tool
2. Circle snips
3. Electrician's pliers
4. Hand installation

2-35. If a bundle of conductors passes through a very high-temperature area, what restraint should be used to tie the bundle?

1. High-temperature pressure-sensitive tape
2. Flat glass fiber tape
3. Self-clinching cable straps
4. Double lacing

2-36. Why do cables and wires require identification?

1. To assist the technician in troubleshooting a circuit
2. To assist the technician in making repairs
3. To permit the tracing of a circuit
4. Each of the above

2-37. Of the following publications, which should be used to determine the wire identification system for a specific piece of equipment?

1. The damage control manual
2. The technical manual for the equipment
3. The maintenance material management manual
4. The illustrated parts breakdown of the equipment

2-38. What is the purpose of the green conductor in a power tool or electric appliance cable?

1. To complete the circuit
2. To act as the "hot" lead
3. To prevent electrical shock to the operator
4. To prevent the motor of the unit from overloading

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|----|---------------------|
| A. | Schematic diagram |
| B. | Single-line diagram |
| C. | Wiring diagram |
| D. | Block diagram |
| E. | Isometric diagram |
| F. | Pictorial diagram |
| G. | Terminal diagram |

Figure 2A.—Types of diagrams.

IN ANSWERING QUESTIONS 2-39 THROUGH 2-45, REFER TO FIGURE 2A.

2-39. Which of the following diagrams is primarily used to identify the components of a system?

1. A
2. C
3. D
4. F

2-40. Which of the following diagrams is primarily used to locate the components of a system?

1. B
2. D
3. E
4. G

2-41. What two diagrams are used in conjunction with text materials to explain basic functions of a circuit?

1. B and D
2. C and G
3. E and F
4. G and A

2-42. Which of the following diagrams is primarily used to explain the overall operation of a system?

1. A
2. B
3. C
4. G

2-43. What diagram must be used in conjunction with a schematic to troubleshoot a system?

1. F
2. E
3. D
4. C

2-44. What diagram shows the most details of a system?

1. A
2. C
3. F
4. G

2-45. If you are required to wire a relay into a circuit, what diagram would be most useful?

1. G
2. F
3. C
4. A

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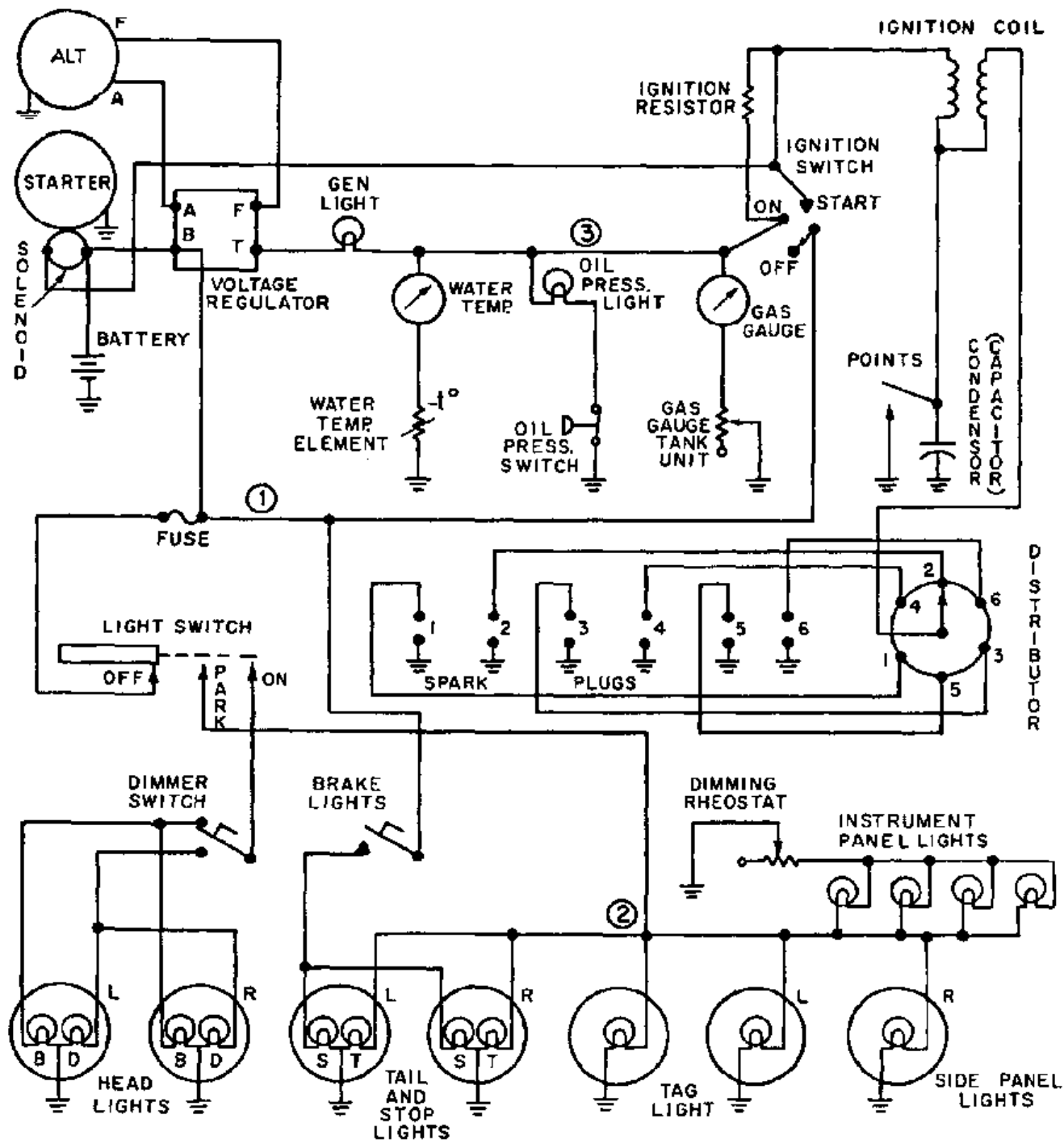


Figure 2B.—Schematic Diagram.

IN ANSWERING QUESTIONS 2-46 AND 2-47, REFER TO FIGURE 2B.

2-46. If the headlights operate normally in the bright position but do not light in the dim position, what would be the probable cause?

1. The dimmer switch is defective
2. The light switch is defective
3. A fuse is open
4. The ground to the headlights is open

2-47. Which of the following faults could cause the left tail light to be inoperative while the other lights operate normally?

1. The light switch is defective
2. The bulb is defective
3. A fuse is blown
4. There is no voltage to point 2

2-48. When you solder or hot-wire strip fluoroplastic insulated wire, which of the following safety precautions should be observed?

1. Wear a safety mask at all times
2. Wear protective gloves
3. Maintain good ventilation to carry off the fumes
4. Do not allow the resin to touch the insulation

2-49. If a circuit has power restored to it, what meter may be used to test the circuit?

1. An ohmmeter
2. A wattmeter
3. A megohmmeter
4. A voltmeter

2-50. If excess solder adheres to the tip of a soldering iron, how should you remove it?

1. Flow flux over the tip
2. Wipe it off on a clean cloth
3. Dip the tip in water
4. Shake it off